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City Improvement Societies.

ONLY a few years have passed since the first Village Improvement Society was organized, but scores of these associations are now doing good work in every part of the country in securing for rural communities more favorable sanitary conditions, improving roads and pathways, beautifying public squares and the grounds about public buildings, educating the public taste, and in many other ways making country life more attractive and satisfying. There would seem to be little need for similar associations in cities where the government is more directly charged with the duties which these societies have assumed. There is a Board of Public Health to look after the city's drainage and general cleanliness. There are Park Commissioners charged with the supervision of its public grounds. There is a Board of Works to look after the highways, and in many cases the planting of trees; and yet there is little question that an active association in every city which should charge itself in a general way with functions similar to those performed by the Rural Improvement Societies would help to supplement official action by directing it in proper channels and making it more effective. Organization is always effective by uniting the desultory efforts of individuals; and that much good can be achieved in the speciel direction indicated is proved by the effective work of the Metropolitan Gardens Association of London, the City Parks Association of Philadelphia and the Tree Planting and Fountain Society of Brooklyn.

A report of this last-named organization has just been received, and from it we learn that of the 70,000 trees now standing in the streets of Brooklyn a considerable portion have been planted under the auspices and at the suggestion of this Society. After it was formed, some eight years ago, many public meetings were held, circulars were issued, and articles calling the attention of citizens to the value of trees in city streets were published in the daily papers. But the work was carried on in still more practical ways. Various nurserymen were asked to furnish information as to the number of trees they had in stock of different varieties and the prices at which they could be obtained. As the time for planting approached the Society secured a storehouse in which samples of trees from various nurseries were kept on exhibition, and suitable persons were always in attendance to give information as to the proper methods of planting, the varieties most useful and the places where they could be obtained at the most favorable prices. When it was desired, the Society not only furnished trees at cost price, but sent skilled men to plant them and charged for the special service only the amount that they had paid for the labor. After the trees were planted instructions were given as to their care; devices for protecting them from horses and other dangers were explained, and efforts were made to create a feeling that the city trees were common property and that every citizen had a personal interest in preserving them. In order to properly educate the young, this Society urged the Legislature to pass an act for the encouragement of arboriculture, and this resulted in the appointment of an Arbor Day for the state, and in its celebration public exercises are conducted by the various school officers throughout the state and participated in by all the children of the public schools. Of course, this general work is but a small portion of what the Society is constantly doing. As an example of its special watchfulness, it may be stated that when some of the trees, notably the Maples, in the city were suffering from the ravages of an insect, a competent entomologist was called in to make a study of the cause and to report upon the best means for overcoming this evil.

Altogether there is no good reason why associations of this sort could not be made as helpful in the city as in the country. Without naming all the directions in which their influence could be exercised for good, it may be worth while to indicate one in particular, and that is in protecting public parks. It is not always, perhaps it is not generally, true that commissioners of city parks have any adequate appreciation of their true function. They cannot be trusted to repel the attacks constantly made on the parks; they often side with the assailants and organize attacks of their own. In this city, for example, it is constantly happening that city officials who would hardly assume to make plans for a monumental public building consider themselves perfectly competent to design an urban park or change the design of one already made. It has never dawned upon them that one of these works is or ought to be as truly a work of art as the other. Only a few days ago the Mayor of this city suggested in an off-hand way, and yet in his official capacity, that the entire system of walks and drives in Central Park should be remodeled. He was troubled by no doubt that his plan would be infinitely superior to the original one, or that he was perfectly qualified to direct such an undertaking. Similar attacks upon the integrity of our parks, efforts to pervert them from their highest use, and even attempts to obliterate them or to confiscate them to some alien use, are happening every year. Central Park has been saved as by fire, simply because there has been intelligent opposition to its destruction made in a few newspapers. These assaults will probably grow more frequent and more urgent as population presses about it more densely, and the time may come when a well-organized defense will be needed to keep its woods and meadows from being utterly trampled out or covered with brick and stone. A voluntary association which would, in addition to other duties, devote intelligent attention to the preservation and proper management of parks could find an ample field for labor in every considerable city of the Union.

JUST a year ago we published a letter from Mr. Charles H. Shinn (vol. ii., p. 398), in which it was stated that Colonel J. B. Armstrong proposed to dedicate 400 acres of magnificent Redwood forest to public use forever. It was there said that this piece of primeval wood was of almost unique value, since it has never been touched by the axe nor has it been pastured. It shows the growth of the Redwood in every type; in single trees, in clumps of twos, threes, fours

and so on up to family circles of ten or twelve about the roots of some giant of an earlier generation. The very side-sprouts, which grow up from the base of these Redwoods, are as large here as timber-trees in other countries. One of the trees which Mr. Shinn measured was forty-seven feet in circumference and 325 feet high.

From a late number of the Cloverdale *Reveille* we learn that Colonel Armstrong has decided not to present the state with this tract of Redwood, nor does he intend to give it to any particular municipality, but to trustees, for the use of the people for all time. The Board will be constituted perhaps as follows: The Chairman of the Board of Trustees of the Golden Gate Park of San Francisco, the landscape-gardener of Central Park, the Chief Justice of the Supreme Court of California and a local trustee in the county. These gentlemen will have the power of appointing their successors, and they will be hampered by few restrictions in the deed of trust. One condition will be that none of the timber is to be cut. Another is that the park shall not be a place of encampment, for fear of fire, and that it shall only be visited by daylight. This magnificent tract lies in Sonoma County, and is accessible by rail from San Francisco, which is only seventy miles distant, and it is the last considerable tract of Redwood in this region or so near the city. Of course the forest is not exclusively Redwood, for these trees are mixed with Laurels and Oaks, sometimes in a compact wood and again in open order, with occasional grassy openings.

It is probable that this report is incorrect in one particular, and that is in regard to arrangements which are said to be in preparation for propagating strange plants, flowers and shrubs to be used in bordering the drives and otherwise ornamenting the giant grove. No doubt Colonel Armstrong appreciates his forest so thoroughly that he will not think of improving it by tricking it out with any exotic finery. He means to preserve it for posterity as a Redwood forest and he will hardly allow its grand expression to be trifled with by any attempts at decoration.

A Fine Bur Oak.

WE published last year (ii., 500) an illustration showing the stem of a remarkably fine specimen of this tree grown on the rich alluvial lands bordering the river-bottoms of southern Indiana, where this species attains its greatest height and girth of stem. This particular specimen had grown in the midst of the forest, thickly encompassed by other trees which had forced an upright development of stem and prevented the great spread of branches characteristic of this and other species of the Oak when these trees find the room and light essential for the full growth of their lateral branches. Wide-spreading Oaks are never met with in the dense forest, although they abound in the north-west in the region which separates the heavy forests of the eastern part of the country from the midcontinental prairies. These intermediate regions, covered with an open growth of Oak-trees, are called Oak-openings. The sparseness of the timber and the prevalence of Oaks, which resist better than most other trees the effects of constant burning, is due, no doubt, to the fires which constantly swept over this whole territory before the advent of white settlers. These fires made the prairies what they are and restricted the forest-growth on the debatable middle ground to the edges of sloughs and other depressions in the general surface of the ground where occasional trees were able to escape the effects of fire and grow to a very large size.

The Bur Oak (*Quercus macrocarpa*) is one of the common trees of the Oak-opening region, where it grows sometimes to noble size. A portrait of one of these large trees appears in our illustration on page 407. It shows the habit and appearance of this tree when it is allowed full opportunity for unimpeded growth in all directions.

This specimen is known as the "Cravath Tree," from the fact that it stands on the farm of Mr. Miles G. Cravath, near the town of Whitewater, Wisconsin. The trunk girths at the ground eighteen feet and six inches. Three feet higher it is twelve feet three inches, and the beautiful cylindrical stem and ponderous limbs are perfectly sound, the tree being still in perfect health. The age of this great Oak can, of course, only be guessed, but it must have been a remarkable specimen in a region of fine trees long before a white man first floated over the surface of the limpid waters of the upper Mississippi.

We are indebted to Mr. Edward Salisbury, President of the State Normal School at Whitewater, for the photograph from which our illustration has been prepared.

The Florida Spruce Pine.

THE littoral belt extending from the alluvial lands of the Mississippi River eastward to the neck of the Peninsula of Florida presents no essential difference in climate or soil, or in the general features of vegetation throughout its entire length. Meteorologically it all belongs to one province. The line of sixty-eight degrees mean annual temperature follows the northern border along the thirty-first parallel of north latitude, and the isotherm of seventy-two degrees follows the sea-shore. The mean annual precipitation between these limits varies from forty-eight to fifty-four inches, showing but slight differences in its distribution throughout the year. Highly silicious deposits of stratified drift cover its surface, almost everywhere making sandy and gravelly soils or light sandy loams. The flat coast plain, intersected by large bays, and smaller inlets surrounded by marshes, is fringed along its shore by hillocks of loose and often drifting sand. The Long-leaved Pine or Cuban Pine form very open forests, which cover a large part of the plain. The damp, sandy soil of these flat-woods, devoid of surface drainage, is covered with a dense carpet of Cyperaceous plants, Rhynchospora, Scirpi, Fuirenas Eleocharis, and numerous species of Xyris, Eriocaulon, and Sarracenias. Their monotony is relieved by groves of Live Oak and Wax Myrtle on the sands of the sea-shore and the more varied tree growth of the richer spots of the swampy depressions. Magnolias, Laurel Oaks, Water Oaks, Sweet Gum and Black Gum are the most prominent on the hammock-land, while the Bald Cypress represents the water-soaked banks of the rivers and their estuaries.

One who travels this coast from west to east is struck by the successive appearance of plants which are never or very rarely met with in the section left behind. If he leaves the eastern shore of the Bay of Mobile his attention is constantly directed to the plants which he has never encountered in the coast region between the western shore of the bay and the Mississippi delta. After crossing the extensions of the sea which intersect this coast, and entering the basins of the great streams which empty into them, he is surprised by the sudden appearance of plants not observed before, most of them becoming more frequent as he approaches the region which discharges its waters into the Atlantic. It would seem that while the wide bays of this coast, with the river basins connected with them, form the only obstacles to the general diffusion of plants over the littoral region of the eastern gulf states, yet to many species which are found on the South Atlantic seaboard these obstacles prove insurmountable, and absolutely prevent their spread toward the west. It would seem also that other plants whose centre of distribution lies toward the western confines of this belt are prevented by the same difficulties from making any progress toward the east. At another time it may be of interest to give instances of this restriction of different species to given limits, instances which cannot but excite interest in the problem of plant distribution throughout a region in which the same climate, soil and topographical features prevail.

Among the forest-trees which one would observe in connection with this distribution of plants, *Pinus clausa*, the Florida Spruce Pine or Sand Pine, would occupy a prominent place. Among the Pines of the southern United States this species is confined to the narrowest limits. It is found from the western boundary of Florida to Key West, where it was observed by Professor Sargent, and along the eastern coast of the peninsula, on the rolling uplands to their termination in the lower part of Volusia County, in the flatwoods and swamps of the further south. This Pine is strictly confined to an arid sandy soil; it flourishes on the dunes of pure white drifting sands which fringe the shore, where its roots often fail to obtain a firm hold, so that it often succumbs to the force of storms, and it is seen bent low in the direction of the prevailing

wind, and sometimes is entirely prostrate. On these sterile wastes the tree is rarely more than twenty or twenty-five feet high, while on the dry ridges with a more solid soil, as near Pensacola, it attains the dimensions of a medium-sized tree, and on uplands of the best quality, where the apparently barren ground is underlaid by a subsoil of the fertile tertiary marls, it arrives at the dimensions of a stately forest-tree, associated with mighty Magnolias, large upland Hickories (*Hicoria glabra* and *H. tomentosa*), Live Oaks, Laurel Oaks and Post Oaks.

On these fertile upland hammock-lands, as found prevailing back of Halifax Bay, the Sand Pine arrives at its best development. Trees over seventy-five feet in height and fully twenty-five inches in diameter are frequently seen here. In this best state of its growth the tree somewhat resembles the Spruce Pine, *Pinus glabra*, with which it is frequently confounded by the settlers.

By the structure of the wood as well as by morphological characters, this species forms, with *Pinus glabra* and *P. echinata*, a natural group of southern distribution. The leaves are in twos, with a short, deciduous sheath from half an inch to two inches or more in length, a half line wide, slender, flexible, concave and slightly keeled on the upper side. The cones are subsessile, horizontally inserted during the first year and strongly reflexed as they reach maturity during the second year. They are from two and a half to nearly three inches long and from one and three-fourths to two inches wide when open. The exposed portion of their scales, with a slightly prominent umbo, is crowned by an erect, short and blunt prickle; they remain on the tree closed for several years. The bark of the young trees is rather smooth, roughish in those of fuller growth, furrowed and divided in square scales. The young shoots are tender. At all seasons and stages of growth, this Pine is readily distinguished from the Scrub Pine (*P. inops*) by the less rigid, more slender foliage of dark green, and from its allies by the ashy gray, reflexed, rigidly closed cones. It produces its fruit abundantly, and almost without failure, season after season.

The wood of this Pine is of a yellowish color, the broad sapwood of a lighter tint; it is soft, easily worked, but wanting in strength and elasticity, and is not durable. Hence as a timber-tree it is regarded as of no importance. The old trees of stunted growth from the sand-dunes along the seashore, with a wood of close grain and of greater toughness, are used for masts for the boats of fishermen and other small craft. As pointed out by Professor Mayr, this tree will in future be undoubtedly of importance in the forestry of the states of the lower south, when the reforestation of the denuded sandy Pine barrens, immense in their extent, is demanded by necessity.

Mobile, Ala. *Carl Mohr.*

Improving Plants by Crossing.

WHILE it must be confessed that the science of plant breeding is far too little understood, one who has made a study of the history of the artificial development of varieties can hardly escape the conclusion that much more successful results have followed the intelligent crossing of varieties than the indiscriminate growing of seedlings, even though the number of plants by the latter method was very much larger. This is what we should naturally expect, and is in perfect accord with the experience of animal breeders. In the mere sowing of seeds, without reference to their inherited qualities, we are aiding Nature by the hand, but in the sowing of intelligently crossed seeds, we are aiding her by both the hand and the mind, and the mind is altogether the most potent agent.

The growing of seedlings is very generally practiced by amateurs to a greater or less extent. In so far as the motive is a hope of securing improved varieties the result is almost always disappointing, especially in the more highly domesticated plants. On the other hand, those who have sought to combine in a new sort, by crossing, certain specific characters possessed individually by others, have in very many cases been successful. Indeed, from the experience of the past, it seems almost safe to say that any two desirable qualities possessed by different varieties of a species may be combined by crossing. This result could not always be reasonably expected in a single attempt, and it is possible, also, that there are laws of correlation which would prevent the union of certain characters. But, in our present knowledge, the chances of securing improved varieties by crossing are so much greater than by selection from seedlings of unknown inherited qualities that the latter method is not at all to be recommended where the former is practicable.

The phrase, "intelligent crossing," has been used advisedly. The indiscriminate crossing of varieties is little more likely to result in progress than the indiscriminate growing of uncrossed seedlings. We should know definitely just what characters we desire in our prospective variety, and should select our parents with the greatest care. Mr. Darwin made the statement, quoted here from memory, that "not one person in a hundred possesses the accuracy of eye and judgment necessary to the most successful breeder." If this is true of animals, it is certainly in a measure true of plants. A thorough knowledge and a careful study of the characters of the parents is indispensable to the highest success, and the same discriminating care is necessary in the fixing of the variety after the cross is secured.

A second argument in favor of crossing as a means of securing improved varieties is the fact that the crossing stimulates variation to a remarkable degree, so that we have not only a chance of combining certain definite qualities of the parents, but also of securing an almost infinite number of other combinations. It certainly is true that the variations resulting from a cross are not necessarily limited to the visible qualities possessed by the parents, but that entirely distinct types may appear in the offspring. If the aim were simply to secure variation, the best known way to accomplish this would be to cross the most widely differing individuals that could be obtained.

It is greatly to be desired that the subject of plant improvement should receive more attention from horticulturists. No other department of horticultural experiment offers a more inviting field. Fruits, vegetables and flowers are in themselves priceless possessions, and the introduction of varieties that make possible better or cheaper fruits, vegetables or flowers than we already have is certainly an end worth striving for. He who produces Wilson Strawberries or Concord Grapes for the market does his fellow man a transient good. But what shall we say of him who originated the first Wilson plant or the first Concord vine? He may be said to have made possible the supplying of the masses of our population through all the future with a delicious and wholesome fruit that had before been only within the reach of the comparatively wealthy. Surely neither statesman nor inventor has conferred upon his fellows a greater boon.

University of Wisconsin, Madison. *E. S. Goff.*

Foreign Correspondence.

Messrs. Backhouse & Sons' Nurseries at York.

THE Holgate Nurseries, in the ancient city of York, are amongst the most famous of plant establishments in England. They have been in existence over a hundred years, and are now managed by the third generation of the Backhouse family. The first was the missionary nurseryman, James Backhouse, who combined with business capacity and a love of plants zeal in the spread of Christianity, which for ten years he taught to the natives of the Cape and New Zealand. He collected plants and sent them home to his nursery at York, amongst the most notable of his collections being numerous Filmy Ferns, which in the York nurseries have been and still are cultivated with marvelous success.

The nurseries have, of course, grown in extent and importance since his time, and they are now generally acknowledged to be amongst the best managed and richest known. The grounds consist of about one hundred acres, and the in-door department of some forty houses, mostly large and of modern design. Four broad walks run parallel from one end of the nursery to the other, and they are flanked by broad borders filled with the choicest of trees, shrubs and herbaceous plants. The arrangement is artistic, the most striking of the plants are conspicuously labeled, and every plant looks so perfectly at home that a walk through these borders alone is delightful to any one interested in gardening; and what a wealth of noteworthy subjects he will see, no matter at what season he goes. Conifers and other evergreens, ornamental at all times, groups of Roses, Spiræas, Ericaceous plants of all kinds, Syringas, etc., with hundreds of the best of herbaceous plants suitable for border planting. Long before the mixed border and a passion for hardy herbaceous subjects took possession of English horticulturists, the York nurseries had an unequaled collection of everything that was good and choice amongst alpine and herbaceous plants.

Stretching away from the borders are the long rows of fruit-trees, forest-trees, conifers and so on, all in good order, with a well-cared-for air about almost every plant. Many nurserymen lack the knack of making an attractive display or show an indifference to it which must surely be a mistake.

The rock garden is a great feature in this nursery, and since about 1,500 tons of rock and £2,000 in money have

been expended in constructing the rockery its extent may perhaps be realized. But, besides stone and money, a considerable amount of art is needed ere a good rock garden can be formed. The best judges say that there is no finer arrangement of stones and plants in England than this in the York nurseries. Huge masses of stone are piled up cliff-like in some places, and are backed by suitable trees, whilst from another point the stones are arranged to represent a glacial slip and their summit is clearly defined against the sky. The effect is delightfully deceptive, for whilst the actual height of the stones is only about twelve feet above the ground-level it appears to be at least twice that height. Winding around and amongst the piles of rock are streams, or small clear pools of water containing Nymphæas and other aquatic plants. In boggy nooks one sees healthy examples of Darlingtonia, Sarracenia, Rodgersia, Todea, and other moisture loving plants. Ferns there are in abundance, whilst Cistuses, Campanulas, Ourisia, Cotoneasters, dwarfed Pines, Ramondia, Daphnes, Genistas, Bamboos, Pinks of all kinds, Veronicas, Saxifragas innumerable, Eurybias, the North American Cypripedia, with many other suitable plants, all combine to make a picture such as cannot be seen elsewhere except in the Alps of Switzerland. No plant that is suitable is omitted, and the consequence is that visitors are enabled to see for themselves the position best suited to each plant both as regards its safety and effect in arrangement. There can be no doubt that this rockery has been the cause of many other rock gardens being formed by English horticulturists. The delights of this department of gardening are supreme; no ugly pots, no stiff stages, very little of the watering pot or abominable flower-stake, but instead every plant looking quite at home in its nature-like surroundings, and so happy as to require very little attention. Then there is constant change, infinite variety and perfect enjoyment whilst working amongst or inspecting them. A great deal may be said in favor of the rock garden, but it must be properly made and carefully planted at the outset. Mere heaps of stones with a handful of soil here and there in the crevices and plants stuck in anyhow are not rock gardens, but only a source of disappointment and disgust.

The rock garden at York is the show-room for the herbaceous and alpine plants, of which the collection is exceptionally rich in variety and extent. Whilst some nurserymen send collectors to bring home Orchids, the Messrs. Backhouse send annually to the European Alps their superintendent of the herbaceous department, who collects and notes the natural conditions of all the choicest and best plants.

In the houses there are, of course, Orchids in endless variety. Cattleyas and Lælias are grown in thousands,—well grown, too,—and that in houses for which the thinnest muslin shading only is used even in the sunniest weather. The Messrs. Backhouse were among the first to prove that many Orchids thrive much better when scarcely shaded even in midsummer, than when shaded heavily, as is usually practiced. Mexican Orchids were in splendid health, and the Cattleyas were pictures of vigor at the time of my visit.

Catasetum Bungerothii is largely and well grown in a moist warm house. And hereby hangs a tale. Last winter a plant of this Orchid was accidentally kept moist by a roof-drip, and this plant wintered better, grew more vigorously and flowered more freely than those which had been dried off. I have myself proved that some Cataseta grow and thrive if kept in a moist house all the year round. It may be unnatural, but it succeeds nevertheless.

Cattleya gigas, *C. aurea* and *C. Dowiana* have flowered extremely well, the result of growing them in baskets suspended close to the ventilators in the top of a span-roofed house and scarcely shaded. There are Cypripediums of almost every kind, which is saying a great deal, seeing how very numerous the kinds are now. Dendrobiums are well grown and numerously represented; Cœlogynes, rare as well as popular species, were also full of vigor. I might run through the whole catalogue of garden Orchids and say with truth that they are almost all grown well in the York nurseries. The best and rarest are represented. Such fine Orchids as *Odontoglossum Harryanum* are grown in large quantity. The Disas were mentioned in last week's issue, but I may note here some good examples of *D. racemosa*.

Hard wooded plants are in favor with Messrs. Backhouse, whilst such choice greenhouse plants as *Rogeria gratissima*, *Luculia gratissima*, *Daphne Indica*, Lapagerias, *Asparagus decumbens*, a most elegant plant when grown in hanging baskets, Javanese Rhododendrons, *Pleroma elegans*, are grown in quantity.

In the stoves one may find all the popular favorites, besides many that are unknown in the majority of gardens—for Messrs. Backhouse have a taste for other plants than the big flowered and the gaudy. *Adamia versicolor*, a cousin of the Hydrangeas, was in flower; treated as a stove plant it apparently blooms freely, whereas in a greenhouse it grows well but does not flower. It has large heads of bluish lilac flowers, not unlike those of a Sonerila; the plant is about a foot high. *Combretum purpureum* was a cloud of bright crimson on the roof of one of the stoves. Sonerilas, Bertolonias, *Ouvirandra fenestralis*—these I noted as being unusually well managed.

Ferns are a specialty in these nurseries. Nowhere, not even at Kew, is there so rich a collection of Hymenophyllums, Trichomanes and Todeas, collectively known as Filmy Ferns. An underground rockery of considerable size is entirely planted with them, and Fern connoisseurs enter it with feelings of delight and admiration. Only the favored are allowed to see it, but it is worth going a long way and taking a good deal of trouble to see. There are besides two houses entirely filled with these delicately beautiful Ferns, the rarest and choicest species being represented by large, well furnished specimens, some of which are at least twenty years old. Few people grow these Ferns, because, as a rule, beginners fail with them. An hour's neglect will probably work mischief that it will take years to undo. But when once their requirements are understood they are very easy to cultivate. The famous Cooper-Forster collection, now at Kew, was formed by a surgeon, and cultivated by him for many years in a house built against the window of his surgery in Grosvenor Street, right in the heart of London.

A large house is arranged inside like a natural fernery, with rockery and water, and is planted with all kinds of tree and other Ferns. Gleichenias, beautifully grown and numerous in kinds, almost fill another house, whilst others contain a large collection of tropical Ferns in beautiful condition.

York is a little out of the ordinary track of the visitor interested in gardening; but no American who finds delight in inspecting a well kept garden, rich in rare and beautiful plants, should visit England and not see the nurseries of the Messrs. Backhouse at York.

London. *Visitor.*

New or Little Known Plants.

Rosa multiflora.

THIS species is an old inhabitant of the Arnold Arboretum, where it was raised from seed sent by Max Leichtlin in 1874. It was first made known by Thunberg, who discovered it in Japan, and published the first description in his "Flora Japonica," printed in Leipsic in 1784. It has only been known, however, in a living state in recent years, the earliest description of it as a garden plant appearing in the *Revue Horticole* for 1876, where it is stated to have been introduced into France about 1862 by André Leroy of Anger, who obtained it from China.

Rosa multiflora * is a vigorous plant with stout branches eight or ten feet long, recurved above the middle, and forming a dense mass of brilliant foliage, which reaches, when the plant is abundantly nourished and allowed free room for full development, a breadth of twelve or fifteen feet. The branches are stout, more or less zigzag, glabrous, light green, destitute of prickles, and armed with stout, flattened, recurved spines. The leaves are six or seven inches long, unequally pinnate, with stout pubescent petioles and conspicuous, deeply cut, comb-like stipules. The leaflets are distinctly petiolulate, ovate or obovate, the apex often contracted into a slender point, and are conspicuously and sharply toothed above the middle; they are dark green and lustrous on the upper surface, paler and slightly puberulous on the lower, especially along the stout midrib. The flowers are produced in axillary and terminal widely-branched corymbs, composing a pyramidal, rather one-sided, terminal panicle eight or ten inches long and four or five inches broad, the slender branches covered with scattered hairs. The flowers† are an inch across when expanded, with ovate-lanceolate, entire, pointed sepals, pubescent on the outer surface, deciduous

*Thunberg, "Fl. Jap.," 214.—Franchet et Sevatier, "Enum. Pl. Jap.," i., 134.—Crépin, "Bull. Soc. Bot. Belg.," xlii., 250; xviii., 278.—Forbes & Hemsley, *Jour. Linn. Soc.*, xxiii., 253.—*Bot. Mag.*, t. 7119.

R. polyantha, Siebold et Zuccarini, "Fam. Nat. Pl. Jap.," i., 20.—Carrière, *Rev. Hort.*, 1876, 253, f. 49-53.

† In the recent figure of this plant in the *Botanical Magazine* the petals of some of the flowers are represented as pink, and in others as faintly shaded with pink. In all the plants raised in the Arboretum they are pure white.

from the fruit, and half the length of the pure white obovate petals, which are deeply lobed at the apex. The ovaries are villose, the long, slender, exserted styles cohering into a column. The fruit is long-stalked, elliptical, a quarter to half an inch long, with obtusely-angled, slightly pilose stones.

Fig. 51.—Rosa multiflora.—See page 404.

Rosa multiflora is exceedingly free blooming, and toward the middle of June the plants are covered with the great clusters of Blackberry-like, sweetly fragrant flowers, in which the golden-colored anthers make a charming contrast with the snowy white petals. It is extremely hardy; it grows rapidly, and, where sufficient room can be found for it, it is altogether one of the most desirable shrubs that has been introduced into gardens for many years. It may be grown either as an isolated specimen on the lawn, or it may be planted on the margins of shrubberies or on rocky banks, for which purpose the pendulous habit of the branches admirably adapts it. It may be used, too, as a hedge plant in the manner that the Cherokee Rose is used in some parts of the southern states.

There are two forms of this plant in the Arboretum, the one which appears in our illustration, and a plant received from Europe as *Rosa polyantha*. This is less vigorous than the other form; the stems are shorter, the flowers are smaller, and appear about ten days earlier. The plants

sometimes suffer in severe winters, and altogether it is the less beautiful and desirable plant of the two.

Rosa multiflora produces seed in the greatest profusion. This germinates readily; and plants may be raised also from cuttings or by layers.

The double-flowered form of *Rosa multiflora* was introduced into England as early as 1804 by Mr. Thomas Evans. It is known as the Bramble-flowered Rose, and is not rare in gardens, where many varieties have been cultivated at different times. The variety *Platyphylla*, which I do not know in any American garden, was described by Lindley, who published a figure of it in the *Botanical Register* (t. 1372), and who called it the most beautiful of all climbing Roses. He noticed, however, that the stems suffer sometimes in winter unless protected.

The results obtained by European rosarians by crossing *Rosa multiflora* with different forms of *Rosa Indica* and of *Rosa semperflorens* are seen in the so-called Polyantha Roses, which have of late years attracted considerable attention. These are not hardy here in the open ground, but Mr. Dawson has obtained a hybrid by crossing the Japanese species with various dark-colored Hybrid Perpetual Roses which is exceedingly promising. The plants obtained by these crosses are hardy, with good foliage, and produce clusters of small, dark-colored, highly-scented flowers. These experiments, although they have not been carried on during a sufficient period to be conclusive, are highly suggestive, and promise at least, a new race of hardy climbing Roses of peculiar beauty and interest.

C. S. S.

New or Little Known Orchids.

ODONTOGLOSSUM × LEROYANUM, Castle.—This is a most interesting artificial hybrid, raised in the collection of Baron Edmond de Rothschild, at Amandvilliers, near Paris, by M. Leroy. It was obtained about five and a half years ago from *O. crispum*, crossed with the pollen of *O. luteo-purpureum*, between which species it is quite intermediate. It is interesting because it is the first artificially raised hybrid Odontoglossum which has flowered, and also because it proves the parentage of *O.* × *Wilckeanum*. That plant has always been considered a natural hybrid between the two species in question, and *O.* × *Leroyanum*, though perhaps distinct enough horticulturally to retain the name, is quite identical from a botanical point of view.—*Gardeners' Chronicle*, June 7th, p. 704.

ZYGOPETALUM JORISIANUM, Rolfe.—A very distinct and handsome species, belonging to the section Euzygopetalum, but with a three-lobed, fimbriate lip and fimbriate column-wings. The lip is cream-white, with a broad yellow margin to the side lobes, and a purple crest, while the segments are green, heavily marked with purple-brown. The habit is somewhat like *Z. intermedium*, but the pedicels are much longer. It was introduced by M. Bungeroth from Venezuela, for the Society "L'Horticulture Internationale," of Brussels.—*Gardeners' Chronicle*, June 7th, p. 704.

CALANTHE × MYLESII, Williams.—This is a hybrid raised by Mr. Myles, of Ryde, Isle of Wight, between *C. vestita nivalis* and *C.* × *Veitchii*. There is, however, little trace of the latter in the plant, which bears pure white flowers like *C. vestita* in shape, with a lemon-yellow throat to the lip.—*Warn. and Will. Orchid Album*, ix., t. 402.

CATTLEYA LABIATA, Lindl., var. WAROCQUEANA, Rolfe.—This is one of the numerous forms which botanically are grouped under the comprehensive term, *C. labiata*, Lindl. It is very variable, and its relation to the other forms of this beautiful group is not yet clearly made out, though it is supposed to be a distinct geographical variety, in the same way as are *C. Mossiæ* and *C. Trianæ*, and others. It is said to be from a new district. It is being distributed by the society "L'Horticulture Internationale," of Brussels, as *C. Warocqueana*, Linden, under which name it was awarded a diploma of honor at a recent meeting of the Orchidénne of Brussels.—*Gardeners' Chronicle*, June 14th, p. 735.

CATTLEYA × INTRICATA, *Rchb. f.*, var. MACULATA, Rolfe.—A very pretty variety, with many rosy purple spots on the sepals and petals. It was collected on the mainland of Santa Catherina, Brazil, and is now in the collection of Mr. Malcolm Cook, of Kingston Hill. It is evidently a natural hybrid between *C. intermedia* and some form of *C. guttata*.—*Gardeners' Chronicle*, June 21st, p. 763.

CYPRIPEDIUM × AYLINGI, Castle.—This is a very beautiful hybrid, raised by Mr. Ayling, gardener to Mr. A. J. Hollington, of Enfield, from *C. niveum* fertilized with the pollen of *C. ciliolare*. The plant is very similar to *C. niveum* in habit, though the shape of the segments is modified in the direction of *C. ciliolare*. The lip is pure white, and the segments white with numerous dots of light purple, which are arranged somewhat in lines. It was awarded a first-class Certificate by the Royal Horticultural Society on June 10th, and a Botanical Certificate by the Royal Botanic Society on the following day.—*Journal of Horticulture*, June 12th, p. 480, Fig. 74; *Gardeners' Chronicle*, June 14th, pp. 747, 748; June 28th, pp. 792, 797, Fig. 131.

CYPRIPEDIUM × VIPANI, Rolfe.—Another very beautiful hybrid in the way of *C. Aylingi*, though quite distinct. It was raised in the collection of Captain Vipan, Wansford, from *C. Philippinense* fertilized with the pollen of *C. niveum*. As in the last, the lip is pure white, though more compressed laterally, while the segments are narrower, white, the dorsal sepal with eleven and the petals each with nine longitudinal stripes of bright purple. It is strongly stamped with the character of *C. niveum*, as indeed are all the hybrids which have this species for one of the parents.—*Gardeners' Chronicle*, June 28th, p. 792.

R. A. Rolfe.

Cultural Department.

Notes on Shrubs.

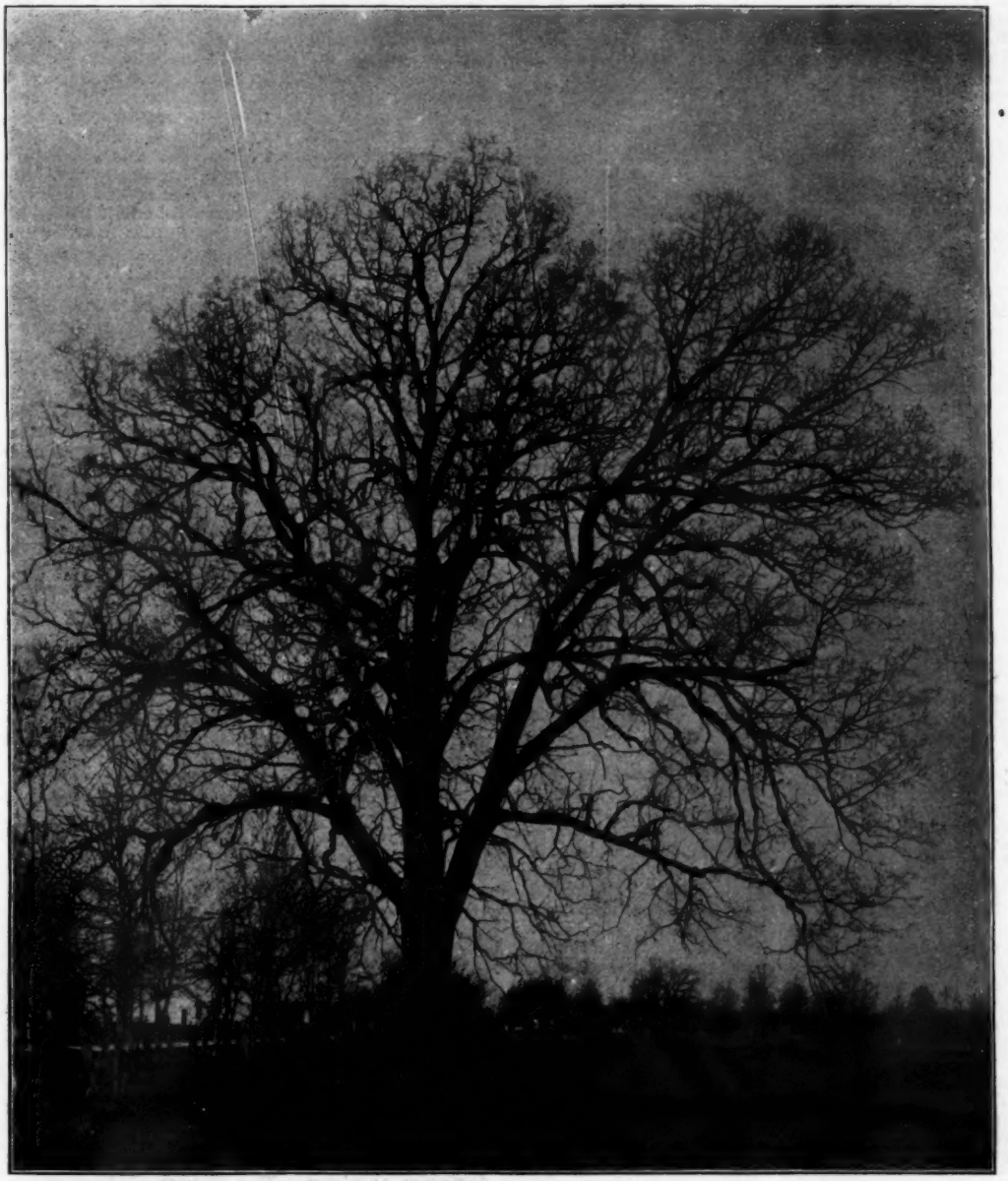
CONSIDERING their value as ornamental flowering plants and their habit of blooming when comparatively few other woody plants produce blossoms, it is surprising how extremely rare the hardy Heaths and Heathers are in American gardens. This is the more remarkable when we think how much these plants are prized by many of the immigrants from Britain and the efforts which many of them have made to introduce their favorites from their native homes to the new, rich soils of this country. In a comparatively few cases the importations seem to have been successful. This is attested by the little patches of Heather which have occasionally been found in the older settled parts of the country along the Atlantic seaboard. Whether all the Heather in the localities where it has been found in Massachusetts, Maine, Nova Scotia and Newfoundland has become naturalized since the colonization of the country by Europeans, may remain a doubtful question; but the origin of several of the so-called wild patches has been clearly traced to the care and enthusiasm of some Scotch or Irish settler.

One reason why so many failures have occurred has no doubt been due to conditions unfitted to their growth and best development to which the plants have been introduced. The severity of our winter climate and the general necessity of some protection is also against them. Much of our heavy clay soil is unsuited to them, and it seems, as a rule, that they degenerate and die where there is much limestone or lime in the soil, unless a spot is specially prepared. In such cases the bed should be composed of peaty soil or leaf-mould mixed with about a third or more of sand, and it should be at least a couple of feet deep. The best success will result where the plants have fairly equable, but not too much moisture. Although the Heather will grow in shady places, the best specimens will be produced where there is plenty of light and air. Artificial propagation from seed is slow and troublesome, and the plants are more easily grown from cuttings or layers. By the last methods, also, any particularly free flowering or otherwise peculiar plant may be indefinitely perpetuated. In reproducing from cuttings the ends of the growing shoots are taken off and placed in sand and covered with glass until roots are formed. Where a plant is already established, however, it is much easier to propagate a few plants from it by layers. Wherever a spreading stem becomes slightly covered with soil it in time produces roots, and as soon as these are sufficiently numerous the new plant may be severed from the parent and safely transplanted.

For our northern gardens the most valuable of the Heaths is the common European Ling or Heather (*Calluna vulgaris*), both on account of its greater hardiness and also because there is quite as much variation in the form and color of its flowers as in any other hardy species. Besides the purplish red flowered type there are varieties or forms with deeper or paler colored flowers and some that are pure white. A very pretty and interesting form has large double rosette-like flowers. Plants which vary from the type in habit are generally not so desirable for garden culture. One or two very dwarf or compact forms are quite pretty, and make curious little tufts, but this diminutive habit does not seem to be accompanied by fine flowers. It is best to renew these and most of the other

Heaths every four or five years, for, although the plants live for a very much longer time, the old stems give them a straggling appearance. There is a good deal of difference in the time of flowering of different plants of Heather. Blossoms are often produced early in July, but generally in this latitude the plants are in the best flowering condition in the first and second week of August.

The Cornish Heath (*Erica vagans*) is much less hardy than the common Heath, and requires more protection to be



A Bur Oak (*Quercus macrocarpa*) in Wisconsin.—See page 402.

equally satisfactory. The small showy pink, or sometimes nearly white, flowers, are borne thickly around the upper portions of the branches, and are occasionally crowded so near the extremities as to form almost globular clusters. They appear at the same season as those of the Ling.

Erica tetralix, or the Four-leaved Heath, with some protection, is fairly hardy, and well worth cultivating. The foliage has a dusty grayish hue, and the whole effect of the plant is not so pleasing as either of the other species. Its red flowers, averaging about a quarter of an inch in length, are borne in close terminal clusters of from eight or ten to fifteen or twenty. The first flowers open about the middle of June, and the best flowering period is in the early part of July, but blossoms are freely produced throughout the month, and a few still remain when the two preceding species are in their most showy condition in early August.

The little Gray or Scotch Heath or Heather (*E. cinerea*) requires more care and frequent renewal of the plants in order to thrive well. The very showy, dense terminal racemes of reddish purple flowers are produced during the summer and autumn, but most freely in the latter part of July and in early August. There are forms with darker or lighter or with white blossoms.

Erica carnea has been several times mentioned in these pages for its early spring-flowering habit. It well repays a little winter protection in the fresh pale red flowers which begin to open in the late autumn and may be gathered bright and

unfaded from beneath the snows. Usually only a small proportion of the buds, which are now (August 12th) well formed, open before the spring.

Dabœcia polifolia, or St. Dabœc's Heath, as it is called in Ireland, where it is native, is one of the prettiest and largest flowered of the Heaths which can be grown in the climate of New England. The barrel-shaped blossoms vary from a third to about half an inch in length. The color of the typical flowers is dark purple, but there is also a pure white form in cultivation. The plants are low-growing, spreading and compact; and the flowers are produced in loose racemes on long stems above the mass of shining evergreen foliage. This is a pretty little species for planting in rockeries. But it grows well in any suitable soil, and produces flowers for a long period of time, although most profusely in late summer, when flowers on woody plants are uncommon.

Arnold Arboretum. *J. G. J.*

Devices for the Fruit Garden.

AT this moment I have four fine Mazzard Cherry-trees covered with mosquito netting to keep off the birds. When only a few Cherry-trees are grown, as is now the case in central New York, robins, cedar birds and cat birds will take every cherry within five days of their coloring. But this fruit is not only very delicious to me, but invaluable as a health preservative. In my judgment the sour Cherries when fully ripe are the most wholesome of all fruits. Generally I cover not only Mazzards, but Early Richmonds and Late Montgomery. Of course the cost of covering will be more than the value of the fruit as a market product; but the same cover will last for two years. Thus protected one can gather delicious Cherries from July 5th down to the end of September. The fruit does not decay badly before September, but ripens and then gets riper and riper till the fruit is good enough for Asgard. This device is valuable when one cannot induce his neighbors to plant Cherry-trees by the thousand and so have enough for birds and planters. When we grew a few Raspberries it was just the same; the birds took the bulk of the crop; but now the cat birds and robins are welcome to help themselves and pay for the privilege with music. We do not miss what is taken because we harvest a hundred bushels and are glad to pay a percentage to an orchestra. The Cherry-tree ought to be planted again in this state as freely as it was fifty years ago. The Black Knot has entirely left off troubling them here and therefore even the lazy can grow them.

My remedy for Currant-worms is to plant Gooseberries about the Currant-gardens, and on these the worms first appear. If thoroughly dusted then the attack is far less severe on the Currants. They prefer the gooseberry just as they prefer the white currant to the red. Of course, such preferences are not discoverable when very little care is taken of the bushes and worms multiply beyond all measure. The currant ranks next to the cherry as a matter of wholesome diet. It is to be preferred far above all other berries.

I have Quinces again bearing like the old-fashioned Quince-bushes of my father's day. Thirty years ago I found it difficult to get crops, and till now have only had an occasional peck of quinces. Two years ago I drew the limbs together in November with stout twine, then wound on straw or hay. The result has been heavy crops of fruit. The Quince needs only slight protection here. It is best to plant on a south or south-east slope, and have an evergreen hedge or tight board fence to the north.

I had great trouble with my berry gardens, owing to the lopping down and tangling of the bushes. To remedy this I set stakes about twenty feet apart in the row, and fasten to these one wire, about four feet high. To this wire I tie the new canes in September with strong twine, two to four in a bunch. Then I leave the canes standing six feet high to bear. They are never broken down in winter, and never in the way in summer. The cost is a trifle.

Clinton, N. Y. *E. P. Powell.*

Two Uncommon Plants.

I HAVE lately had two plants in flower which I have never seen elsewhere, and think worthy of more extended cultivation. They both belong to the fibrous-rooted section of the Iris family.

Sisyrinchium striatum, like most of the genus, is native to the lower slopes of the Andean chain, and is the finest of all species known to me, from a gardening point of view. The foliage grows to the height of thirty inches, is flat and flag-like, as in most of the family, having a width of nearly two inches. It grows in dense tufts and is of a beautiful gray-green color, so that if it never bloomed it would still be highly ornamental. The flower-stalks are often more than three feet high, and are densely clothed for many weeks with closely clustered flowers, three-fourths of an inch in diameter, light yellow, marked with fine lines of a darker shade. Each flower lasts but a day, but new ones are constantly expanding. My plant began to blossom in April, and was in full bloom until the middle of July, and even now, August 11th, there are some flowers to be seen.

This species may be propagated by division, by cuttings of the flower-stem, and, best of all, by seeds, which are abundantly produced. The plant, whose dimensions I have given, is in an eight-inch pot; it is likely that it would grow to a larger size if planted out.

Orthrosanthus multiflorus is an Australian species. Its manner of growth is much like that of the plant just described, but it is not so tall, its foliage is dark green, instead of glaucous, and much narrower. The flowers, also, are less numerous, though they continue to appear for nearly the same length of time. They are nearly an inch in diameter, and are of a beautiful porcelain blue. There is no difficulty in growing this beautiful plant, nor is it at all shy in flowering; every year when April comes round the spikes push up plentifully. Both of these plants derive much benefit from being plunged in the ground during the autumn, care being taken to take them in-doors before frost.

Canton, Mass. *W. E. Endicott.*

Hardy Flowers for Florists' Use.

IT needs no argument to show that hardy perennials should not be neglected where a mixed collection of plants is grown for sale; but it does not seem so generally understood that many of them are valuable for cut flowers and well deserve the attention of the commercial florist, especially since these plants are well able to take care of themselves, and especially in the winter, when all other things tax all the resources of the cultivator. What can exceed for simple elegance a vase filled with Painted Daisies? And yet how seldom are these single Pyrethrums grown by the florist. They are easily raised from seed and flower the first year. The beautiful perennial Candytufts, too, are much better than the annual kinds. *Iberis correæfolia* and *I. sempervirens* are invaluable where pure white flowers are desired about Decoration Day. The double *Achillea serrata*, a somewhat new plant, will speedily supersede the old *A. ptarmica*, to which it is as superior as the Japan Anemone is to the common Wood Anemone. And certainly no one who grows annual Sunflowers can reasonably neglect the perennial one, so perfect in form, so free flowering and so durable when cut. It is rather singular that this double Sunflower, which I could never persuade to survive a New Jersey winter, has lived out here for years without attention.

The Coreopsis, especially *C. lanceolata*, is pretty well known, but it is not generally known that there are two plants being distributed under this name. The one is a fair plant, but the other is a far better one. It is to be hoped that by next year this case of mistaken identity may be cleared up. *Gillenia trifoliata* and *G. stipulacea*, two beautiful native plants, are both invaluable for mingling with cut flowers, owing to their pure white color and their graceful position on the stems. Both should be grown, as the one follows the other in the order named, and flowers can be had for over a month. The Gypsophilas, especially *G. paniculata* and *G. Steveni*, are most useful among other cut flowers. No other hardy plants have such an airy appearance and loose sprays scattered among other flowers in a vase will surround the whole as with a delicate mist or halo.

Doronicums are sure to be popular, and the leading nurseries are preparing themselves with large stocks, so that they can be purchased reasonably in fall, and if placed in a cool house where Mignonette or Violets are grown, beautiful yellow flowers three or four inches across may be had in February and March from *D. Caucasicum*, *D. Clusii* and *D. plantagineum excelsum*. The flowers of these plants last long, even when cut. The Larkspurs are always popular. Of the single kinds, *D. formosum* is hard to excel among dark blues and it comes readily and true from seed. The lovely sky-blue *D. Belladonna* would be indispensable if it could be raised otherwise than by division, for unfortunately it does not produce seed, owing, it is said, to its hybrid origin. But perhaps the Larkspurs of the future are the double ones. The best way to have them and to keep them is to get named double kinds, save the seed, and raise your own, weeding out the single ones—about ten per cent. of the whole. Larkspurs thus raised will have a strong constitution suited to the locality in which they are grown.

Few persons who have not seen the fine varieties of Pæonia that are now to be had can imagine the wonderful range of color and the fragrance of the flowers. They will grow in any good soil, and should not be disturbed except for division—once in three years. *Daphne Cneorum* is essentially a florists' plant, though not an herbaceous one. It is quite hardy, flowers for six months, and is easily grown in free sandy soil. One of the questions to come before the Florists' Convention this week is, "Can Hellebores be Grown to Advantage by the Commercial Florist?" If I might be permitted to express an opinion in advance, it would be emphatically in the affirmative. Had I a commercial place, with a shady border at the back of a greenhouse, I would not hesitate to plant largely the varieties (not the type) of *Helleborus niger*, of which there are now nearly a dozen, all in some degree an improvement upon the older plant. When cold weather comes frames and sashes could be placed over the plants, and the flowers thus protected would yield profitable and speedy returns. The trouble is that Hellebores are usually imported in fall, when they really ought not to be planted until spring.

Omitting other flowers, I may say in conclusion that florists who have ever grown the Eulalias for their fine flower-spikes always find that they meet with universal favor when cut and dried for winter decoration. They will last for years, but are best renewed annually.

South Lancaster, Mass. *E. O. Orpet.*

Alocasias.

THIS interesting group of stove Arads includes a considerable number of distinct species and varieties, some of the latter of garden origin being among the finest warm-house foliage plants, while several of the original types are equally desirable. There is much diversity in the form and marking of the leaves of the various sorts, so that most of them are readily recognized.

They are natives of the East Indies and various portions of the Malay Archipelago, though probably not at any considerable altitude, and therefore enjoy warm-house treatment and plenty of moisture during the period of growth, and these conditions will be found essential to their well-being. At the same time it should be remembered that during the winter most of the Alocasias make but little growth, and therefore require but little water; in fact, some of them grow better after a season of entire rest, *A. Jenningsii* and *A. Marshallii* being among this class.

In regard to soil, the Alocasias prefer a light, open compost, as their thick, fleshy roots will not make much headway in a heavy or sodden soil, and for varieties such as *A. metallica*, *A. Sedeni*, *A. Veitchii*, *A. Sanderiana* and *A. Thibautiana*, and others of like characteristics, a mixture composed of rough fibrous peat, with perhaps one-fourth of chopped sphagnum and some sand, will be found most suitable, while *A. macrorhiza*, *A. zebrina*, *A. Jenningsii* and others of this class make most satisfactory progress when potted in a compost formed of the above ingredients, with the addition of a third part of coarse turfy loam and some dry cow manure, these species being comparatively gross feeders. These plants should in all cases have good drainage, for while they enjoy copious waterings when in full growth, they soon lose vigor when exposed to stagnant moisture. In bright weather they may be syringed freely, especially underneath the leaves, to keep away the red spider; otherwise the Alocasias are but little subject to the attacks of insects.

Prominent among the older varieties may be mentioned *A. metallica* (which is also recognized under the name of *A. cuprea*), a handsome kind, with large bronzy green leaves, which are purplish on the under side and strongly outlined by the prominent veins. This species was introduced from Borneo some thirty years ago, and will still bear comparison with some more recent introductions. *A. Sedeni* is somewhat similar in form and ground color to the preceding, but is improved by the addition of ivory white veins. This variety is one of the finest for exhibition purposes, producing very large foliage and also being of rapid growth.

A. Sedeni was the result of a cross between *A. Lowii* and *A. metallica*, and has been in cultivation for a number of years. *A. Veitchii* is another effective species when well grown, its leaves being of rather different form from those above mentioned, and standing up well on long foot-stalks. They are deep green on the upper side, with whitish veins, and of a peculiar slaty hue on the reverse side. This is also a native of Borneo, and has been long in cultivation. But probably the most striking in appearance of the whole genus is *A. macrorhiza variegata*, which forms immense leaves of bright green, more or less marked with pure white variegation. The variegation is somewhat irregular, frequently appearing in large patches, while on other leaves it will be so mixed with the green as to give a marbled effect. *A. macrorhiza variegata* is one of the strongest growers in the family, and enjoys plenty of heat and an occasional watering with liquid manure. It is said to have originated under cultivation in the island of Ceylon, and may certainly be considered one of the many botanical prizes received from that favored home of tropical vegetation.

Among the smaller growing sorts may be mentioned *A. Jenningsii*, which has leaves about a foot in length, bright green in color, with the spaces between the chief veins occupied by large blotches of dark chocolate color, sometimes almost black. This species is of quick growth, and produces a large number of offsets from its bulbs, which render it of very easy propagation. Of similar character is *A. Marshallii*, though possibly more ornamental, its foliage having in addition to the dark markings of *A. Jenningsii* a central band of grayish white. These two species are natives of India, and have been known in our gardens for more than twenty years.

Another fine species, and one that is not very common in American collections, is *A. zebrina*, which produces almost erect, sagittate leaves of dark green, these being supported by strong foot-stalks that are light green in color and banded zebra fashion with a much darker shade.

The later additions to the Alocasia family have also been numerous and valuable, many of them being hybrids of great beauty, while a number of remarkably fine species have also been introduced.

One of the newer sorts that should not be overlooked is *A. Sanderiana*, a remarkably fine species with sagittate leaves, the margins of which are deeply sinuated and marked with white, as are also the ribs.

Other fine species are *A. Chantrieri*, a hybrid from *A. metallica* and *A. Sanderiana*; *A. Thibautiana*, a species from Borneo; *A. Lucianii*, the result of a cross between *A. Thibautiana* and *A. Putzeysi*, and *A. Lindeni*.

Holmesburg, Pa. *W. H. Taplin.*

Hardy Annuals.

ANY ONE who cultivates a collection of plants during a few leisure hours, and has a fondness for experimental gardening, is sure to find days when everything grows the wrong way or not at all, and when failures seem to make up the entire history of the garden. At such times one turns for comfort to the sturdy old plants, perennial or annual, which are always reliable, and require so little attention that, like healthy children, they are apt to pursue their course with little notice. There are numerous hardy annuals which are readily established in the garden, where they will annually reproduce themselves from self-sown seed if the ground is not upset every spring. One learns to expect the annual appearance of these favorites and to welcome them as old friends. Seeds of these plants should be sown from late summer to early winter, and as a rule they should not be covered deeply.

Among the plants which I annually expect are *Argemone grandiflora* (the Prickly Poppy), a good old plant, with beautiful thin white flowers, each holding a cluster of yellow anthers. The foliage is smooth, glaucous and spiny. The branches are irregular and angular in their growth, giving the plant a most distinct appearance.

Chrysanthemum Myconis, which was had from B. K. Bliss some years since, seems a variety of *C. Segetum*, but of better habit and with similar flowers. It adds a gleam of color here and there to the border.

Gypsophila muralis, the dainty little Baby's Breath, is a free seeder, and preserves its race on the edge of a border, but is easily crowded out. It is invaluable for mixing with cut flowers.

Calliopsis tinctoria is one of the best known of annuals, but it is not seen at its best except where full-grown plants have had ample room, when they will cover a diameter of three to four feet, and reach a height as great. Writers who are continually advising us to "give every plant room to reach its full development," do not seem fully aware of the possibilities of well-grown annuals.

Poppies, of course, once grown in a garden may be found in every corner, for their seed crop is enormous and very tenacious of vitality. But for persistent reproduction commend me to the Morning Glory, which it seems almost impossible to eradicate once it has well bloomed in the garden. The seeds will apparently lie dormant for years, ready to germinate quickly under proper conditions. Of course, with care, one could weed out every plant, and at length exterminate it; but one may pursue this course ever so diligently until some fatal day when a plant which has been hiding in some out-of-the-way

corner is suddenly caught in the act of blooming. Human weakness hesitates to destroy so sturdy and beautiful a flower, and the mischief is done for another long course. On the whole, with all their beauty, I am content to admire these with Petunias in my neighbor's garden. *Humulus Japonicus* completes a worthy trio of persistent seeders, and is perhaps the worst of the lot. The seeds are light and are blown all over the garden. They germinate with the first warmth of the year. They run and twine in the most aggravating way, making them difficult to eradicate. They would be capital plants for covering large bare places.

Adlumia cirrhosa (Allegheny Vine) is a much neater and more pleasing vine for a small garden, though the withering flowers give it a rather unthrifty look for a prominent place. Though a biennial, it seems never to desert the garden. Calendulas may usually be found in the spring, as also a few Asters, ordinarily single, and in a dry spot, after a favorable season, Nasturtiums even may be found in plenty, and there is a world of pleasure in a good breadth of this beautiful flower.

Union County, N. J. *G.*

The Forest.

Suggestions for Restoring Wasted Forests.

ARGUMENT is no longer needed to show the necessity of a more definite policy for the maintenance of our woodlands. Aside from a closer and more economical use of raw material, there is but little difference between present forest-management and that of a century ago. There is the same cutting of everything that it will pay to handle, and the same abandoning of everything else—land and all—to take care of itself as best it may. That some lands become reforested in time, and hence productive, is due rather to kind Nature and good luck than to any intelligent labor or protection. For the most part forest-lands are practically abandoned, and the work of reforesting is indefinitely delayed. Time was when much woodland was cleared for cultivation, but now, with sharp competition under new economic conditions, such areas in the older states grow fewer and fewer, and it has become evident that all lands not profitable for agriculture should be utilized for forest-purposes.

The artificial planting of forests, much as we may desire to see it undertaken, seems yet a long way from us in the eastern states, save possibly on a small scale, or to serve some incidental purpose. The conditions which will make it either feasible or profitable are not visible on our horizon. We cannot create at once that public sentiment which will make effective those laws against trespass and firing, without which the labor would be in vain. We can scarcely hope to enlist the intelligent and painstaking care necessary to secure the best results, nor that faith which is willing to incur so heavy a present expenditure for the sake of remote gain. Time may overcome all these difficulties, and a future generation may adopt a scheme of forest-management as elaborate as that which any part of the world affords. But for our country today what can the advocates of forestry-reform offer and recommend?

The answers to this question will doubtless differ for different parts of the United States. Speaking for the eastern states only, and more particularly for Pennsylvania, it is plain to me that very considerable areas are unfit for profitable cultivation or even for grazing, and that their most natural and profitable use is as forests. How can these forests be maintained? In the majority of cases there is a natural reforesting going on through the seeding or sprouting of old trees. While this seems for a time to be ineffective, and the young growth is smothered by weeds and bushes, it commonly gains the mastery in a few years, and, if it meets with no further check, occupies the ground and makes the well known "second growth." In some parts of the country this second growth has become a small but valuable factor in maintaining forest-conditions. In all it is capable of becoming a larger and much more important one. Indeed, in it we have the hope for the forestry of the near future, and toward its production and conservation we should bend our energies. That the second growth is not of the same kinds of trees nor so valuable as the first, are statements only partly true and subject to much exception. Acting upon Nature's method of forest-restoration, that process may be supplemented, and even replaced in some cases by artificial seeding. Some experimental work of this kind looks promising now, but it is too early to speak definitely of either the cost or result of it. It may be argued that, excepting the expense incurred, the same difficulties inhere in this method of reforesting as in any other. This is true, and it remains to be seen to what extent these difficulties may be obviated. The damage to young woodlands by fire is certainly very great, and is commonly underestimated; the damage from trespass in various forms is no inconsiderable item. Laws, often very stringent ones, have been enacted for the protection of woodlands, but they are practically of no avail in so far as fire is concerned, since punishment under them is of rare occurrence. In the eyes of people generally forest-property has an insignificant value unless it has reached maturity and can be immediately turned into money. If it is isolated or too young to be of immediate use it is looked upon as of little account. Unfortunately the owners themselves are generally too indifferent to give sufficient care to their property. Either because of lack of knowledge and of faith in the productive value of such lands, they make little effort for self-protection, and through their indifference and the lack of suitable policing, the natural forest-lands are too often sparsely covered, the trees grow old before their time, and are useful only as a commentary on our shortsightedness. The danger and the damage to the community from this unfortunate state of affairs are well known, and it remains to inquire if anything can be done to remedy this unhappy condition.

Two plans occur to me as worthy of trial, one by the owner and the other by the community.

When it is desired to protect the fish in a stream or the fruit in an orchard the owner posts a conspicuous notice to forbid trespassing. Let him do the same on his forest-property. Some kinds of trespass, such as the pasturing of cattle in open and mountain woodlands, can be easily controlled; some, such as hunting, berry-picking and the like, not so easily; but the moral effect will be the same in all, and it will make prominent the fact that the owner has some care for and interest in his own. Such notices if prepared in large quantity could be made cheap and durable, and placed where they would command attention. Can our forestry associations, agricultural and other organizations render any more effective service for the cause than to agitate this matter, and urge our farmers and land owners to undertake it; or even to prepare and furnish such notices at a nominal price to all who will agree to use them? Much that is technically trespassing is not injurious, but this distinction could be safely left to the owner, as are many other matters. What is needed is a public sentiment which shall look upon forest-property, in any state and condition, as in no respect different from any other kind of property, and which shall secure for it the same immunity from injury. If nothing is done such a sentiment may come at last, but it will come very slowly. By some such means as has been suggested may we not hasten it?

Undoubtedly the prevention of forest-fires is of prime importance, and our chief effort should be toward that end; but when fires are kindled, as they will be under the most careful supervision, how can we control and suppress them?

The same apathetic condition of both the owner and the community is to be faced here as in the case of trespass. The fire is left to burn until it has passed beyond control, and it stops only when everything inflammable within its reach has been consumed. Disgraceful examples of the truth of these statements are so common that they form a staple part of our daily news. To have an adequate sense of the injury done by these conflagrations one must have a knowledge of the indirect as well as the direct value of forests, and must bear in mind also the relatively long time required to produce a forest-growth. Were proper attention given to the matter we should be so keenly alive to the value of forests that fire or any other agency which threatened to destroy them would be as quickly and vigorously combated as if some monumental building were exposed to destruction.

Forest-guards are charged with this duty of protection in other countries and we have no officers corresponding to them. But why may we not add to the duties of some existing township officers, say the supervisors or constables, the oversight and control of all fires, accidental or other, on farming and forest-land? There would then be some responsible head for each district, who would have power to summon help, to give or refuse permits for burning clearings and the like, and who should receive reasonable compensation for these special duties. An innovation like this, although so small and at the same time so well warranted, might still meet objection, it is true, but the same difficulty would probably appear if any other plan were devised.

The forestry question, from every point of view, is subject to the same economic laws as any other, and its advocates should be able to point out practicable methods for its solution.

The same conditions which are slowly but surely changing our methods of agriculture are opening the way to and making possible a rational forest-practice. We cannot too quickly or thoroughly consider what shall be its methods.

State College, Pa. *W. A. Buckhout.*

Correspondence.

The Effect of Seasons on Vegetation.

To the Editor of GARDEN AND FOREST:

Sir.—Too much care cannot be taken in judging of the character of trees, shrubs or fruits by their behavior during 1890. The season is so far abnormal in every sense. Strawberries, for instance, have not developed one of their real characteristics in my beds, Crystal City, Summit and Sharpless alone excepted. Haverland, which really is a very large berry, showed fruit only medium-sized and without flavor. Sweet berries turned up sour, and nearly everything had a touch of bitterness. In fact, symptoms of unfertilized fruit were general. I should not have known Bubach in boxes; and Bomba turned out better than its real character. I have seen no really perfect strawberries in size, flavor and color, although I had one-third of a crop and many large berries. But had I desired to impart to any one knowledge of the real quality of any berry I should not have done it by offering him samples of this year's bearing. For this reason I regret to see reports of berries made at all this year. My Pearls and Sharpless and Bubachs when mixed I could not have separated with certainty, although another year nothing would be easier.

The effect of season is very peculiar in other ways. One summer ten or twelve years ago there was an unusual tendency to produce variegations in foliage. This, no doubt, had something to do with the effect of the solar beams on chlorophyl in spring. I regret that I have no meteorological data of the year. But I noted among my own finds a variegated Quince-bush, variegated Silver Poplar, variegated Apple, and many more. None of them endured July heat except the Poplar. This I unfortunately lost by the open winter following. It was heaved out by the frost.

I am confident that we have before us a vast field for investigation in a comparative study of different years on foliage, fruit and flowers. In 1889 I noted here a marked tendency among double flowers to show fewer petals than usual. To determine the real character of a fruit or flower requires a comparative test. Grapes particularly appear very abnormal at times. If any one were to pass through my vineyard on two successive seasons I am quite confident I could get from him exactly opposite comments concerning Grapes, especially Rogers' Hybrids. Here is a class of Grapes sensitive beyond measure to the year's special characteristics. Number 30 is at times equal to a fine hot-house variety; then again it is flavorless. Lindley one year cannot be surpassed, while the next it is inferior. To discard the variable sorts would reduce our list very greatly. Even Worden in 1889 was of poor quality over a large part of the country.

Clinton, N. Y. *E. P. Powell.*

Shaftesbury as a Tree-Planter.

To the Editor of GARDEN AND FOREST:

Sir.—In Traill's Life of Shaftesbury, published by Appleton in 1886, on page 104, is the following interesting passage on tree-planting: "In the very thick of the tangle of intrigues, rivalries and cross-purposes in which the cabal were involved during the year which elapsed between the conclusion of the second Treaty of Dover and the reassembling of Parliament in 1672, we find him [Shaftesbury] addressing a long letter to his bailiff, containing the most minute instructions for the planting of several varieties of the best cider Apples, to wit, 'the Red-streake, the Black Apple, the Streake Must, the Sour Pippin, the Bramsbury Crab, the Grouting.' Further he goes on to inform 'Hughes' (who, no doubt, was intimately convinced of his knowing much more about it himself than the authority quoted by my lord) that the best planting of timber-trees is 'with nuts, acorns, seeds and footsets, and not with young trees removed; and in that manner of planting where the ground is dry, he never plants on little hills, banks or ridges, but sows and sets them on the plain ground, having first made it with several plowings and diggings very light and fine, which should be begun about September, that the frost might season the earth against the spring, when you plant. When this is done the roopworm is killed and will not annoy the plants. He useth constantly' (does this experienced gentleman by whose woodcraft Hughes is being put to shame), 'in setting of chesnuts, acorns and seeds, to steep them twenty-four hours in milk, which gives them a great advantage; he sets his seeds and plants five feet one from another, and sets the two first years among them beans, which not only pays his charge, but, as he affirms, extremely cherisheth the plants. He waters his plantation the two first years only. . . . He plants an abundance of the best sort of Filberts among his plantations of timber. I would have you do the same amongst mine. He assures me that if I plant Siccamores near my gardens they will spoil all my fruit with the flies they breed. Therefore pray pluck up all the Siccamores that are in the dry meadow behind my kitchen garden, and in the room of every one of them plant a Chesnut, a Walnut or a Honey-broke Oak.'"

Brooklyn. *J. N. B.*

Tecoma grandiflora.

To the Editor of GARDEN AND FOREST:

Sir.—I am glad that you called attention to the merits of *Tecoma grandiflora* in last week's paper. Perhaps the reason that this fine old plant has not been more generally used is found in the fact that it is sometimes rather tender when young, but if it can be protected until the main stem is some years old by straw matting during the winter it will be found perfectly hardy, and no plant at this season can show an equally beautiful bloom. A plant by my house is probably thirty years old, and its main stem is as large as a man's arm. I have just counted twelve open flowers on one of the immense panicles, with twelve buds yet to open. Since these flowers are borne on the wood of the year hard cutting back will increase the abundance of its bloom. When tied to a stake for a time its stem will become self-supporting to a height of four or five feet, and from early August until hard frost the plant will make a conspicuous and elegant appearance. I think that some large-flowered forms of *T. radicans* have been occasionally called *T. grandiflora*, but the distinction between the plants will be evident to any one who examines them.

Flushing, L. I. *S. B. Parsons.*

Sargentia Greggii.

To the Editor of GARDEN AND FOREST:

Sir.—Since writing of this plant (page 362) I have found it in mountain cañons about the Pass of San José (Villar Station, on the Tampico branch of the Mexican Central Railroad), attaining the average size of trees, fully fifteen inches in diameter. Here at last it was seen in full bloom, its bright green foliage half hidden by close panicles of white flowers three to six inches high, a beautiful tree indeed.

Associated with it in these mountains was found, as I was convinced, another species of this new genus, a large shrub, with leaves mostly simple, pubescent and olive-green in color (those of *Sargentia Greggii* being trifoliate and smooth), and small clusters of flowers scarcely paniculate.

San Luis Potosi, Mexico. *C. G. Pringle.*

Recent Publications.

A Manual of Orchidaceous Plants.—Part VI. *Cœlogyne, Epidendrum*, etc. Messrs. James Veitch & Sons, Chelsea.

The sixth part of this useful work, which has recently appeared, is devoted to the genera Cœlogyne, Epidendrum, Spathoglottis, Phajus, Thunia, Chysis, Calanthe and a few others, or such of the species as are usually found in cultivation. It extends over 134 pages and contains about forty excellent wood-cuts. It is treated in the same excellent and comprehensive manner as in previous issues—details of the history, introduction and cultural requirements of the different species being given, also their geographical distribution, synonymy and references to original descriptions and figures, all of which enhance the value of the work.

In those genera from which hybrids have been raised we find an enumeration and description of the several kinds given after that of the species. The notes and illustrations under this head are particularly interesting, and include the genera Calanthe, Chysis, Epidendrum, Phajus and Thunia, also the curious bigener raised between Phajus and Calanthe, to which the name Phaio-Calanthe × has been given. In the case of Calanthe these hybrids are becoming rather numerous, and seem likely to become more so, for the facility with which they can be produced, and their comparative precocity in flowering, as well as their beauty, all contribute to the interest attending the raising of them.

Of the work generally it is enough to say that it fully maintains its high standard of excellence, and from the long experience which the authors have had in the management of this interesting family, there can be little doubt it will prove invaluable to cultivators generally. The succeeding part is to include Phalænopsis, Ærides, Vanda and the allied genera, according to announcement, and will doubtless prove exceptionally interesting.

Notes.

A monument is to be erected in Salisbury Cathedral to the memory of Richard Jefferies.

A statue of Linnæus is to be given to the City of Chicago by its Swedish residents, and will be placed in Lincoln Park.

"Ten-thousand-times-sprinkled-with-gold" is one of the poetic names which the Japanese are fond of bestowing upon their Chrysanthemums.

A catalogue of his collection of Orchids, recently distributed by Mr. Van Imschoot, an amateur of Mont St. Amand, Belgium, with the view to facilitating exchanges between himself and other amateurs, contains the names of about 800 species and varieties.

The Superintendent of the Public Gardens at Launceston, Tasmania, writing to *The Garden*, says: "All our Chrysanthemums are grown out-of-doors in the open garden; the climate here suits them admirably. . . . Mrs. Alpheus Hardy has just flowered here and is attracting a good deal of attention."

Foreign journals note with approval that the Prefect of Savoye has forbidden the gathering of *Cyclamen Europæum* in the woods of his province, the beautiful plant being threatened with extermination by collectors who annually send it in enormous quantities to the markets of Chambéry and Aix-les-Bains.

At Gooseberry shows in Warwickshire prizes are given for single berries, and the first premium this year in Faleshill, near Coventry, was taken with a red berry weighing an ounce and a quarter, and looking, as *The Fruit Trade Journal* reports, more like a plum than a gooseberry. No exhibits were admitted to this class which did not weigh an ounce or more.

At the recent great horticultural exhibition in Berlin, visitors were asked to record their opinions as to which was the most beautiful Rhododendron shown. The favorite proved to be the rosy lilac Everestianum, so deservedly popular in this country, for which 12,800 votes were cast, while a variety called Limbatum, having white flowers with a crimson edge, came next, and Viola third on the list.

An example of the way in which plants seek for nourishment in sterile situations was noticed recently by a correspondent of an English journal, writing from Florida, who says that under groves of dwarf Oaks, where the soil is too poor to bear grass, Cacti (Opuntias) may be found which, although not rising more than six inches above the ground, have roots that extend eight or ten feet horizontally just beneath its surface.

The highest mountain in the Hartz range, the Brocken, so intimately connected with legends of the Devil and his cohorts, is to be brought into line with the world's general tendency toward scientific rather than superstitious thought. A botanic garden is to be established there, under the control of the Director of the Botanical Garden at Göttingen, for the purpose of cultivating the plants indigenous to the mountain itself and to other lofty places in the neighborhood.

A correspondent of the *American Florist* says that while in 1874 there were but thirty-three florists in San Francisco there are now seventy-two, and that "all over the state the same proportionate development is manifest. The improvement in public taste," he adds, "during the past five years is still more clearly marked; quality is more desired and better prices are paid. The Daffodil, for instance, then very rare, has become the prime favorite for a spring flower, and the California wild flowers, which no florist kept for sale five years ago, now fill large windows on the principal streets."

Many writers in foreign journals are just now calling attention to the great value of the Locust (*Robinia Pseudacacia*) for planting in situations where it is desired to prevent the shifting of loose soil. One example cited is of very large plantations recently made in Roumania along the borders of the Danube upon banks of sand. "Thanks to the excellent character of the tree," says the *Revue Horticole*, "which will grow almost anywhere, these plantations have succeeded very well, and they have the double advantage of solidifying the shifting dunes and of furnishing an excellent wood, while utilizing surfaces which hitherto had been wholly unproductive."

In an address before the Columbus, Ohio, Horticultural Society, Professor W. J. Green said that it was now easier to grow Plums and Pears than formerly, and of late these fruits have been among the most profitable fruit crops. In planting, a heavy, tenacious, wet soil should especially be avoided. No manure should be applied to Pear-trees. They will not stand forcing, as blight sets in when they grow too rapidly. A steady, slow growth is safest. Only a few varieties should be planted as dwarfs, and in general it is better to plant standards. The only safe dwarfs are Clapp's Favorite and Duchess d'Angouleme. These are also good as standards.

At a recent meeting of the California Academy of Sciences, Doctor Gustav Eisen spoke of the Sequoia forests in Tulare County, which have lately been surrendered to lumbermen by the Land Department. Doctor Eisen says that the destruction has begun in earnest already. On the Tule River he examined the stump of one tree which was forty-one and a half feet in diameter. These trees are so conspicuous as individuals that each one has a name of its own. The one mentioned above was called "Philadelphia," another is called the Centennial, and a third, known as the "California Stump," is thirty-three feet in diameter, and 60,000 shakes were made from the tree. After Doctor Eisen had explained the shamefully wasteful methods of lumbering in these forests a committee was appointed to memorialize Congress for the protection of the only remaining grove of these giant trees.

Mr. Horsford's mention of *Sabbatia chloroides* recalls the fact that great masses of this beautiful wild flower often form a conspicuous feature of the August exhibitions of the Massachusetts Horticultural Society, and it is sometimes offered for sale by the florists of Boston. At the summer resorts along the New Jersey coast great quantities are brought in by boys from the moist, sandy barrens, where it grows in great abundance, and a ready market is found for it. A mass of these delicate pink flowers loosely set in a vase is very ornamental. The flowers remain in good condition long after being cut and the unexpanded flower buds continue to open for many days. The delightful fragrance of the Sabbatia gives it an additional charm, and it is no wonder that large and increasing orders for the seed of this plant are coming over from Europe every year.

The Crescent has hitherto been considered the best market Strawberry in central Ohio, but the comparatively new varieties, Bubach, Haverland and Warfield, are all so good that it is difficult to determine which of the four deserves the precedence. At the Ohio Experiment Station they easily excel all other varieties in productiveness, and they all have imperfect or pistillate flowers. "And why should we not expect this?" asks Dr. Lazenby, in *The Country Gentleman*. "The production of pollen is an exhaustive process. If the vital energies of the plant are expended in this way, certainly we cannot expect as good a result in developed fruit as we can where no pollen is produced. We must remember, however, that in order to get the best results, these imperfect varieties must be well fertilized. Whether it is better to use a productive perfect variety as a fertilizer, or to use one known to produce a large quantity of pollen, and that at the right time, without reference to its fruit, is an open question."

We have received by mail from Mr. P. J. Berckmans, of Augusta, Georgia, a flowering branch of *Leucophyllum Texanum* a shrub which has rarely if ever been seen here in cultivation. Mr. Berckmans writes that he tried for years to propagate this species with living plants, cuttings and seeds; but he never succeeded until some five years ago, when two plants were started. These are now four feet high, and with their ashy white foliage and abundant purple flowers, they are very conspicuous. They endure the warmest and driest weather well, since their large roots penetrate the soil to a great depth. The foliage, which is evergreen in its native habitat, stands without injury a temperature which does not fall below fifteen degrees Fahrenheit, and these plants have lived through a freeze of five degrees above zero. In writing of the forest-vegetation of the Lower Rio Grande Valley, Mr. C. G. Pringle speaks of this plant (see vol. ii., p. 394) as the most striking shrub of the region, and calls it "surpassingly lovely, with a profusion of purplish bloom surmounting the velvety white foliage." No doubt it will prove a great addition to our list of shrubs for latitudes south of Washington, and it may survive winters much farther north if slight protection is given to it.